

## HELP

Save the Dwindling Endemic Flora of the Hawaiian Islands  
at Least as Herbarium Specimens for Museums of the World

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Though this disturbing article was submitted to a local periodical for publication February 27, 1977, it was returned as unsuitable for printing July 26. Disappointed, I here submit it for the more international readers of *Phytologia*. As an addendum, I wish to mention a release received July 21 from the State of Hawaii's Department of Land and Natural Resources.

Our older executives and legislators, usually the product of schools concentrating on the Three Rs and ignoring the teaching of Biology, hardly realize that the intelligent World about us is horrified by our bull-in-the-china-shop attitude toward the outstanding biological treasures Nature has provided for us. These are an ever increasingly important magnet for attracting wealthy tourists and scientists to our shores. So I was not surprised when I received a request dated February 10, 1977 from E.H. Rapoport, Fundacion Bariloche, Rio de Negro, Argentina for information about the present status of our native flora and the name, date of introduction and extent of each of our exotic plants - especially our pernicious weeds. Though the task is impossible because of its enormity, I am mailing him with this, my present report, articles by Honolulu Star-Bulletin Conservation Editor Whitten appearing 8/22/68 and 2/21/77 concerning Clidemia hirta (L.) D. Don or Koster's Curse, a member of the Melastomataceae.

The late Dr. Harold Lyon, a botanist by training and an efficient Director of the Hawaiian Sugar Planters' Experiment Station in Honolulu, was a powerful man with a strong, persuasive personality. He was convinced that our uplands should become a thick tangle of plants to increase by fog drip and rainfall water for irrigating the lowland sugarcane fields. Employees of the Station, such as Fred Hadden, were instructed that wherever they might travel, to bring seeds and other propagules back to the Islands. He was particularly interested in banyans and strangler figs of all kinds, the late Dave Fullaway concentrating on their study and becoming an expert on the peculiar wasps effecting their pollination. Dr. Lyon

favored these figs, he told me to my horror, because the plants had no timber value and hence jungles consisting of them would never succumb to the lumberman's ax but catch water undisturbed for ever. Many of such plants were grown in the Station's nursery in Wahiawa, Island of Oahu, now a State Botanical Garden.

One of the exotics in Wahiawa was Clidemia hirta, carefully grown in tins under the supervision of Forester George McEldowney and staff. Being interested solely in endemic plants and the animals that depend on them for food and shelter, I feebly protested in the late '40s the planting of the Clidemia seedlings in the Pupukea-Kahuku area of Oahu where I was spending so many days gleaning its endemic riches for permanent preservation in the museums of the World. My unheeded protest was countered by Lyon's remark that the species was particularly promising as, similar to lantana, its seeds would be widely disseminated by birds like the dove and mynah.

I had collected this tropical American shrub of the Melastome Family while Botanist of the Anne Archbold Expedition to Fiji in 1940, my voucher specimen being preserved in Harvard's Arnold Arboretum. It had become such a pernicious weed in Fiji that it was known there as Koster's (not Coster's) Curse, in memory of the reckless wretch who had foolishly introduced it. It was not only a costly weed in pastures, plantations and gardens; but a scourge in the forest by crowding out and exterminating - and that means for ever - the endemic flora. It is briefly illustrated in Hosaka & Thistle's "Noxious Plants of Hawaiian Ranges" in 1954; listed by Degener & Degener in their leaflet of plants to be studied along the Poamoho Trail of Oahu, Aug. 27, 1961 by members of the Tenth Pa-Pacific Science Congress; and figured in color by Merlin in his "Hawaiian Forest Plants" in 1976.

Though influential in the spread of Clidemia hirta on Oahu, it is patently unjust to blame Dr. Lyon for the introduction of this noxious weed to the Islands. Had he done so, he certainly would have mentioned the fact in his meticulously kept file of introduced exotics long housed in the Station Library on Keeaumoku Street, Honolulu. Though search for this valuable file at the Lyon Arboretum was futile, I was delighted to learn that retired Forester L.W. Bryan of Kailua-Kona, Island of Hawaii, owns a partial copy that he had made of it a score years ago. His perusal for me of it shows no mention of any Clidemia. That it should have been mentioned in the lost portion is pure conjecture.

Even though insects have been introduced for biological control, such as a moth caterpillar that skeletonizes the leaves, the scourge, disseminated mainly by birds and feral pigs, is spreading to some of the other islands presumably by the vector man on hiking boots and camping gear.

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For additional Clidemia information, including sixty references, consult L.L. Wester & H.B. Wood, Dept. Geography, Univ. Hawaii.

Though harmful to Hawaiian Biology with his continuous introduction of some of the most vigorous and harmful weeds from the far corners of the World to help rush our endemic biota to extinction, Dr. Lyon was an efficient, conscientious "sugar" executive, a position for which he was employed; and one of the great benefactors to local horticulture. He not only introduced many plants of great interest and beauty to our gardens and condominium lanai; but established and/or materially helped Foster Botanical Garden, Wahiawa Botanical Garden, and the University of Hawaii's Lyon Arboretum, all on the Island of Oahu where tourists eager to see the real Hawaii presently congregate.

But why do we not learn from experience? Recently I read in the local newspaper that a would-be benefactor, apparently a restaurateur and not a botanist, is introducing a Hebe (incorrectly identified in the article) to the Islands because it is so aggressive that it will cover the junk piles, discarded cars and waste places about Honolulu with greenery. This "Down Under" exotic may be a two-edged sword as it may likewise smother with greenery our ornamentals, garden hedges, papaya trees, plantations and ultimately our hard-pressed endemics. Instead of opening up another Pandora's box of expensive problems, should not Beach's Blunder be extirpated before it re-seeds itself and emulates Koster's Curse? Federal Law wisely discourages the introduction of exotics - was the Law innocently ignored?

The frightening result of more recently fallacious thinking of a few individuals endangers the sanctity of our two National Parks, truly Cities of Refuge for endemics peculiar to large areas of the Islands of Hawaii and Maui. They maintain that exotic weeds now fill niches that always have been empty of natives. Even were this true, such weed patches would be foci for the continuous infection of unspoiled primeval surrounding regions. Exotics, for the most part free of the fungi and insects that plague and control their spread in their native home, compete for lebensraum at the expense of endemics having endemic fungi and insects feeding upon them.

Although the release from the State's Department of Land and Natural Resources mentioned above maintains that a forest products industry could "provide some 800 jobs in rural areas and a net cash flow to landowners in the State of \$4 million annually," it ignores the costly effect on the lucrative tourist industry; the biological research programs supported by lucrative grants-in-aid; and, in a Biblical sense people can understand, the Sin of exterminating God's endemic Creations unique to the Hawaiian Islands.

Reading further, we learn that "A target of 200,000 acres, equivalent to 10 percent of Hawaii's forest lands, may ultimately be a part of our industrial forest resource base." This approaches the area of Molokai and Niihau combined! The present craze appears to be for "queensland maple, toona, and some eucalyptus." I have noted that pines are likewise favored particularly in the Kona Dis-

trict of Hawaii. Even a lay person knows that a planting of Eucalyptus and Pinus, with their fallen, resinous leaves and needles, produces a surrounding area devoid of a healthy understory of duff producing water-holding underbrush harboring endemic birds and other endemic animals. Today, a casual hour's flight by helicopter above 5,000 feet ground level will disclose numerous, extensive bulldozed and clear-cut areas in midst of the remnant native forests where specific endemics were flourishing in small circumscribed ecological niches. Trees even now are being harvested as "Wood chips for pulp or fuel," and thus sold to countries in the Orient via foreign bottoms - we now lack a merchant marine - which wisely prefer to sacrifice our forests to their own. What ferocious, uneducated Islanders we must be in contrast to refined, intelligent Mainlanders who went so far - too far I believe - to hold up the construction along the St. John River of the one and three tenths billion (\$1,300,000,000) Dickey-Lincoln hydroelectric project because the last known station of the Furbush lousewort, an endangered Maine snapdragon, was in jeopardy!

With the imminent decline of the sugarcane and pineapple plantations, there is room for a lumber industry on abandoned "sugar" and "pine" lands at lower elevations. This is especially convincing since August 1977 when local newspapers admonished us to reduce our water usage voluntarily 10% or it shall become mandatory. I find no logic for wiping out our remaining superb native watershed forests with their endemic biota as has been done, for example, on the privately owned, once-fascinating Island of Lanai by bulldozing parallel strips through it and planting rows of exotic Pinus! Expressed differently, it is replacement of a verdant, biologically almost unknown forest that is far more valuable intellectually than the entire surface of moon and mars with a monotonous stand of "weed trees" with no more interest to Man than how many boardfeet or tons of woodchips they will produce in 30-60 years.

The above complaint is like futile howling in the wilderness. We should be realistic and learn from History: Just as drunken orgies during Prohibition Days were not ended by the Volstead Act, so am I convinced conservation laws and regulations will not prevent the imminent extermination of most Hawaiian endemics by exotic weeds and misplaced industries. This annihilation being inevitable by illicit or legal means, botanists - and zoologists should emulate them - of the World should at least preserve Hawaiian specimens NOW to add to museum collections where they can be studied by appreciative future generations.

In summary, I implore colleagues to come,

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